

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/778,043	LILLY ET AL.	
	Examiner	Art Unit	
	Carlos Lopez	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 5/17/04 & 8/3/04.
2.  The allowed claim(s) is/are 1-34, 36, 38 and 40.
3.  The drawings filed on 07 February 2001 are accepted by the Examiner.
4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All
  - b)  Some\*
  - c)  None
 of the:
  1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6.  CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date 8/3/04.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other Fax Claims 1-40.

**EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Edward Brown on 8/4/04.

The application has been amended as follows:

1. (Currently Amended) A cigarette filter comprising an intermetallic compound reagent which binds with a gaseous component of a gas stream to remove said gaseous component from said gas stream.
  
2. (Currently Amended) The cigarette filter according to claim 1, wherein the ~~filter comprises a cigarette filter~~ is attached to a tobacco rod by tipping paper or the intermetallic compound reagent is incorporated in one or more cigarette filter parts selected from the group consisting of shaped paper insert, a plug, a space, or a free-flow sleeve.
  
3. (Currently Amended) The cigarette filter according to claim 1, wherein the intermetallic compound reagent selectively binds to unsaturated hydrocarbons in the gas stream.

4. (Currently Amended) The cigarette filter according to claim 1, wherein the intermetallic compound reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt.

5. (Currently Amended) The cigarette filter according to claim 1, wherein the gaseous component to be removed from said smoke gas stream is 1,3-butadiene.

6. (Currently Amended) The cigarette filter according to claim 4, wherein said intermetallic compound reagent is incorporated in cigarette filter paper located within a free-flow filter, the filter paper optionally having a three-dimensional shape and/or the filter paper being a liner on the interior of a hollow tubular element.

7. (Currently Amended) The cigarette filter according to claim 1, wherein said intermetallic compound reagent is incorporated with cellulose acetate fibers and/or polypropylene fibers forming a plug or a free-flow filter element.

8. (Currently Amended) The cigarette filter according to claim 4, wherein said intermetallic compound reagent is incorporated in or on a support material.

9. (Original) The cigarette filter according to claim 8, wherein said support material comprises silica gel, porous carbon or a zeolite.

10. (Currently Amended) The cigarette filter according to claim 4, wherein said ~~transition~~ transition metal includes iron and/or titanium.

11. (Currently Amended) The cigarette filter according to claim 1, wherein said intermetallic compound reagent comprises nanometer or micrometer size clusters of an iron aluminide or a titanium aluminide.

12. (Currently Amended) The cigarette filter according to claim 1, wherein a metal atom of the intermetallic compound reagent binds to a C-H bond and/or a C-C bond of the gaseous component.

13. (Currently Amended) A method of manufacturing a cigarette filter which is useful for removing a gaseous component of a gas stream, comprising incorporating an intermetallic compound reagent in a cigarette filter, the intermetallic compound reagent being effective to bind with a gaseous component of a gas stream sufficiently to selectively remove the gaseous component from the gas stream.

14. (Currently Amended) The method according to claim 13, further comprising attaching the cigarette filter to a tobacco rod with tipping paper or the intermetallic compound reagent is incorporated in one or more cigarette filter parts selected from the group consisting of shaped paper insert, a plug, a space, or a free-flow sleeve.

15. (Currently Amended) The method according to claim 14, further comprising a step of attaching the filter paper within a free-flow filter of a cigarette such as by forming said filter paper into a three-dimensional shape or attaching said filter paper as a liner on the interior of a hollow tubular element or combining said intermetallic compound reagent with fibers and forming a filter element from said intermetallic compound reagent and fibers or combining said intermetallic compound reagent with cellulose and/or polypropylene fibers and forming a plug or free-flow filter element or incorporating said intermetallic compound reagent in a cavity of said filter.

16. (Previously Presented) The method according to claim 13, wherein the intermetallic compound reagent is effective for removing unsaturated hydrocarbons including 1,3-butadiene, isoprene and/or toluene from the gas stream.

17. (Previously Presented) The method according to claim 13, wherein the intermetallic compound reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt.

18. (Currently Amended) The method according to claim 17, further comprising a step of loading said intermetallic compound reagent in or on a support material forming a filter element of the cigarette filter.

19. (Original) The method according to claim 13, wherein the support material comprises silica gel, porous carbon or a zeolite.

20. (Currently Amended) A method of removing a gaseous component from a gas stream, comprising passing the gas stream in contact with a cigarette filter comprising an intermetallic compound reagent which binds with a gaseous component of the gas stream and removes said gaseous component from the gas stream.

21. (Currently Amended) The method according to claim 20, further comprising steps of forming the gas stream by burning tobacco and directing tobacco smoke through the cigarette filter such that the component of the gas stream to be removed is brought into contact with the intermetallic compound reagent and prevented from reentering the gas stream.

22. (Previously Presented) The method according to claim 21, wherein the intermetallic compound reagent is incorporated in one or more cigarette filter parts selected from the group consisting of filter paper, shaped paper insert, a plug, a space, or a free-flow sleeve, the tobacco smoke being passed through the one or more filter parts.

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23. (Previously Presented) The method according to claim 20, wherein the intermetallic compound reagent is effective to selectively remove unsaturated hydrocarbons present in the gas stream.

24. (Previously Presented) The method according to claim 20, wherein the intermetallic compound reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt.

25. (Original) The method according to claim 20, wherein the cigarette filter removes 1,3-butadiene from the cigarette smoke.

26. (Currently Amended) The method according to claim 20, wherein the intermetallic compound reagent is incorporated in or on a support material selected from the group consisting of silica gel, porous carbon or and a zeolite.

27. (Currently Amended) The method according to claim 26, wherein said silica gel has an average particle diameter of at least 10  $\mu\text{m}$  or said silica gel is in the form of particles having a mesh size of at least 60 and said tobacco-smoke gas stream is passed through a mass of particles of said silica gel.

28. (Original) The method according to claim 26, wherein said silica gel is incorporated with cellulose acetate fibers and/or polypropylene fibers and the tobacco-smoke gas stream is a smoke stream from a burning cigarette.

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29. (Previously Presented) The method according to claim 20, wherein a metal atom of the intermetallic compound reagent binds to a C-H bond and/or a C-C bond of the gaseous component.

30. (Previously Presented) The filter according to Claim 1, wherein the intermetallic compound reagent is a non-oxide intermetallic compound reagent or a crystalline intermetallic compound reagent.

31. (Previously Presented) The method according to Claim 13, wherein the intermetallic compound reagent is a non-oxide intermetallic compound reagent or a crystalline intermetallic compound reagent.

32. (Currently Amended) A filter comprising a metal reagent which binds with a gaseous component of a gas stream to remove said gaseous component from said gas stream, The cigarette filter according to claim 1, wherein the metal

intermetallic compound reagent comprises nanometer or micrometer size clusters of a transition metal or alloy containing a transition metal or a transitional metal salt and the metal reagent is incorporated in cigarette filter paper located within a free-flow filter, the filter paper optionally having a three-dimensional shape and/or the filter paper being a liner on the interior of a hollow tubular element.

33. (Currently Amended) A method of removing a gaseous component from a gas stream, comprising passing the gas stream in contact with a cigarette filter comprising a metal reagent which binds with a gaseous component of the gas stream and removes said gaseous component from the gas stream. The method according to claim 20, wherein the metal intermetallic compound reagent is incorporated in or on a support material selected from the group consisting of silica gel, porous carbon and a zeolite and said silica gel has an average particle diameter of at least 10  $\mu\text{m}$ , or said silica gel is in the form of particles having a mesh size of at least 60 and the gas stream is passed through a mass of particles of the silica gel.

34. (Currently Amended) A method of removing a gaseous component from a gas stream, comprising passing the gas stream in contact with a filter comprising a metal reagent which binds with a gaseous component of the gas stream and removes said gaseous component from the gas stream. The method according to claim 20, wherein the metal reagent is incorporated in or on a support material selected from the group consisting of silica gel, porous carbon and a zeolite and said silica gel is incorporated with cellulose acetate fibers and/or polypropylene fibers, and the gas stream is a smoke stream from a burning cigarette.

35. (Cancelled)

36. (Currently Amended) A cigarette, comprising:  
the cigarette filter according to claim 35 1; and  
a tobacco rod attached to the filter by tipping paper.

37. (Cancelled)

38. (Currently Amended) A cigarette, comprising:  
the cigarette filter according to claim 37 4; and  
a tobacco rod attached to the filter by tipping paper.

39. (Cancelled)

40. (Currently Amended) A cigarette, comprising:  
the cigarette filter according to claim 39; 11 and  
a tobacco rod attached to the filter by tipping paper.

The title was amended to read as follows:

FILTERING UNSATURATED HYDROCARBONS CIGARETTE FILTER  
USING INTERMETALLIC NANO-CLUSTERS COMPOUNDS

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The following is an examiner's statement of reasons for allowance: the cited prior art only discloses a cigarette filter having a mixture of metals, alloys, but does not disclose a cigarette filter having an intermetallic compounds. The term intermetallic compound is being accorded its plain meaning as understood by one of ordinary skill in the art. As noted in the non-patent literature submitted on 9/5/03, an intermetallic compound is a chemical compound composed of two or more metals. Thus the term imtermetallic compound is distinguished from a mixture of two or metals as in the case of metal alloys disclosed by Derwent Abstract 1233957 A.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public

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PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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